Efficacy evaluation of empty palm oil fruit bunch compost in improving soil characteristics, plant growth and disease suppression of tomato plants under tropical acid soil

ABSTRACT

Aim: Tomato is one of the most important crops worldwide as it is the second most important vegetable in the world after potato. A study was conducted to investigate the efficacy of empty fruit bunch (EFB) compost in improving soil characteristics, plant growth and disease suppression of tomato plants under tropical acid soil. Methodology: Twelve tomato seedling cv MT-11 were transplanted on each planting bed. The growth of tomato plant was assessed based on plant height, leaf area, dry matter weight and incidence of bacterial wilt disease. Soil sampling was done at 45 and 60 day after transplanting (DAT) for physio-chemical and microbial properties. Results: Applying EFB compost increased plant height, leaf area, dry matter accumulation, and suppressed development of bacterial wilt disease compared to using chicken manure. A higher disease reduction (16.7 %) occurred with 15 mg ha^{-1} EFB compost, followed by 22.5 mg ha^{-1} EFB compost (14.3 %), and 7.5 mg ha^{-1} EFB compost (8.33 %). Interpretation: Organic amendment in tomato cultivation affects soil properties, plant development and disease suppression. Application of EFB compost at 15 mg ha^{-1} appeared as the best treatment soil amendment in tomato cultivation under tropical acidicsoil condition.

Keyword: Disease resistance; EFB compost; Lycopersicon esculentum; Soil properties